

Preliminary Amendment
USSN: 10/552,071

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions and listings of claims in the application:

LISTING OF CLAIMS:

1. (previously presented): A motor drive control apparatus comprising a voltage detecting section for detecting phase voltage or line voltage of a brushless DC motor having three or more phases, a current detecting section for detecting motor current, and a rotor position estimating section for calculating electrical angle of the rotor of the motor, wherein the rotor position estimating section comprising;

a back-EMF detecting section for each phase for calculating a back-EMF of each phase of the motor from the phase voltage or line voltage, the motor current, the winding resistance value and winding inductance value, of the motor,

an angular speed calculating section which detects a back-EMF which becomes a maximum value in the back-EMF of each phase, and which calculates angular speed ω of a rotor of the motor,

and an electrical angle calculating section for calculating electrical angle θ of the rotor from the angular speed ω .

2. (currently amended): A motor drive control apparatus according to claim 1, further comprising a rotor position detecting sensor for detecting electrical angles $\underline{\theta}_0$ θ of the rotor of the motor in a discrete manner, wherein the angle electrical calculating section corrects the calculated electrical angle θ by the detected electrical angles $\underline{\theta}_0$.

3. (previously presented): A motor drive control apparatus according to claim 1 or 2, wherein the rotor position estimating section comprises an error resistance calculating section which calculates a resistance change amount ΔR caused by temperature change of the winding resistance based on an error $\Delta\theta$ between the calculated electrical angle θ and the detected electrical angles $\underline{\theta}_0$.

4. (previously presented): A motor drive control apparatus according to claim 3, further comprising a changed temperature calculating section for calculating a temperature change amount ΔT of the winding based on the resistance change amount ΔR .
5. (previously presented): A motor drive control apparatus according to claim 3 or 4, wherein the rotor position estimating section corrects the calculated electrical angle θ of the rotor by using the temperature change amount ΔT or the resistance change amount ΔR .
6. (previously presented): A motor drive control apparatus according to claim 1, further including a low pass filter which is disposed in an output of the angular speed calculating section.
7. (original): An electric power steering apparatus using the motor drive control apparatus according to any one of claims 1 to 6.